

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) An optical fiber array comprising:

a substrate having a shoulder and including a grooved portion and a planar portion which are formed integrally with each other on respective opposite sides of said shoulder;

said grooved portion of said substrate having a plurality of grooves formed such that said plurality of grooves are arranged in parallel with each other and such that each of said plurality of grooves is defined by two side walls which form a predetermined angle therebetween;

a plurality of optical fibers partly accommodated within said plurality of grooves, respectively, and thereby positioned on said grooved portion, said plurality of optical fibers being supported by said planar portion of said substrate;

a covering plate disposed on said grooved portion of said substrate, to force said optical fibers partly accommodated in said plurality of grooves of said grooved

portion, onto said two side walls of said each groove, to thereby position said optical fibers; and

adhesive layers formed so as to fill gaps between said optical fibers and said substrate and between said optical fibers and said covering plate, for integrally bonding said optical fibers to said substrate and said covering plate,

and wherein said gaps consists of a gap having a transverse cross sectional surface area $S1$ and formed between each of said optical fibers and an upper surface of said grooved portion of said substrate, and a lower surface of said covering plate, and a gap having a transverse cross sectional surface area $S2$ and formed between said two side walls of each of said grooves and said each optical fiber, said transverse cross sectional surface areas $S1$ and $S2$ being determined to satisfy an inequality $S1 > S2$.

2. (Original) The optical fiber array according to claim 1, wherein each of said optical fibers has an outside diameter of $125\mu\text{m}$ and said optical fibers are arranged with a spacing pitch of $127\mu\text{m}$, said predetermined angle formed between said two side walls of said each groove is larger than 70° and smaller than 100° .

3. (currently amended) The optical fiber array according to claim 1, wherein each of said ~~groves~~grooves is a V-shaped groove.

4. (Original) The optical fiber array according to claim 1, wherein each of said grooves is a groove having an inverted trapezoidal shape.

5. (Original) The optical fiber array according to claim 1, wherein each of said grooves is a U-shaped groove.

6. (currently amended) The optical fiber array according to claim 3, wherein said predetermined angle formed between said two side walls of said V-shaped groove is gradually increased in a portion of said grooved portion ~~of~~of said substrate on the side of said shoulder, in a direction toward said shoulder.

7. (previously presented) The optical fiber array according to claim 3, wherein a distance between a nominal level of said upper surface of said grooved portion and a bottom of said V-shaped groove is gradually increased in a portion of said grooved portion of said substrate on the side of said shoulder, in a direction toward said shoulder.

8. (Currently Amended) A substrate for an optical fiber array according to claim 1, ~~comprising a grooved portion for positioning a plurality of optical fibers, and wherein said grooved portion has a plurality of grooves formed such that said plurality of grooves are arranged in parallel with each other and such that each of said plurality of grooves is defined by said two side walls which ~~from~~ form therebetween an angle larger than 70° and smaller than 100°, said plurality of optical fibers being partly accommodated in said plurality of grooves, respectively, and thereby positioned on said grooved portion.~~

9. (Original) The substrate according to claim 8, which is formed by a press forming method.

10. (Currently Amended) An optical fiber array comprising:

a substrate having a shoulder and including a grooved portion and a planar portion which are formed integrally with each other on respective opposite sides of said shoulder;

said grooved portion of said substrate having a plurality of V-shaped grooves formed such that said plurality

of V-shaped ~~groves~~ grooves are arranged in parallel with each other and such that each of said V-shaped grooves has a V-shape defined by two side walls which form therebetween ~~and an~~ angle which ~~is~~ becomes gradually larger ~~increased in a portion~~ ~~of said grooved portion on the side of said substrate,~~ in a direction toward said shoulder;

a plurality of optical fibers partly accommodated within said plurality of V-shaped grooves, respectively, and thereby positioned on said grooved portion, said plurality of optical fibers being supported by said planar portion of said substrate;

a covering plate disposed on said grooved portion of said substrate, to force said optical fibers partly accommodated in said plurality of grooves of said grooved portion of said substrate, onto said two side walls of said each V-shaped groove, to thereby portion said optical fibers; and

adhesive layers formed so as to fill gaps between said optical fibers and said substrate and between said optical fibers and said covering plate, for integrally bonding said optical fibers to said substrate and said covering plate.

11. (Currently Amended) An optical fiber array comprising:

a substrate having a shoulder and including a grooved portion and a planar portion which are formed integrally with each other on respective opposite sides of said shoulder:

said grooved portion of said substrate having a plurality of V-shaped grooves formed such that said plurality of V-shaped grooves are arranged in parallel with each other, such that each of said V-shaped grooves has a ~~V-shaped~~ V-shape, and such that a distance between a nominal level of said upper surface of said grooved portion and a bottom of said V-shaped groove ~~is becomes gradually greater increased in~~ a portion of said grooved portion on the side of said substrate, in a direction toward said shoulder;

a plurality of optical fibers partly accommodated within said plurality of V-shaped grooves, respectively, and thereby positioned on said grooved portion, said plurality of optical fibers being supported by said planar portion of said substrate;

a covering plate disposed on said grooved portion of said substrate, to force said optical fibers partly accommodated in said plurality of grooves of said grooved portion of said substrate, onto two side walls defining said each V-shaped groove, to thereby position said optical fibers; and

adhesive layers formed so as to fill gaps between said optical fibers and said substrate and between said optical fibers and said covering plate, for integrally bonding said optical fibers to said substrate and said covering plate.

12. (Currently Amended) A substrate for an optical fiber array, comprising:

a grooved portion for positioning a plurality of optical fibers;

a planar portion formed integrally with said grooved portion, with a shoulder being formed between said grooved and planar portions, said planar portion supporting said plurality of optical fibers positioned on said grooved portion; and

said grooved portion of said substrate having a plurality of V-shaped grooves formed such that said plurality of V-shaped grooves are arranged in parallel with each other and such that each of said V-shaped grooves ~~has~~ has a V-shape defined by two side walls which form therebetween an angle which ~~is becomes gradually larger increased in a portion of~~ is becomes gradually larger ~~said grooved portion on the side of said substrate, in a~~ direction toward said shoulder, said plurality of optical fibers being partly accommodated in said plurality of grooves, respectively, and thereby positioned on said grooved portion.

13. (Original) The substrate according to claim 12, wherein said angle is gradually increased in a portion of said each V-shaped groove between a longitudinally intermediate part thereof and an end thereof on the side of said shoulder.

14. (Original) The substrate according to claim 12, which is formed by a press forming method.

15. (Currently Amended) A substrate for an optical fiber array comprising:

a grooved portion for positioning a plurality of optical fibers;

a planar portion formed integrally with said grooved portion, with a shoulder being formed between said grooved and planar portions, said planar portion supporting said plurality of optical fibers positioned on said grooved portion; and

said grooved portion of said substrate having a plurality of V-shaped grooves formed such that said plurality of V-shaped grooves are arranged in parallel with each other, such that each of said V-shaped grooves has a V-shape, and such that a distance between a nominal level of said upper surface of said grooved portion and a bottom of said V-shaped groove is becomes gradually larger ~~increased in a portion of~~ ~~said grooved portion on the side of said substrate, in a~~

direction toward said shoulder, said plurality of optical fibers being partly accommodated in said plurality of grooves, respectively, and thereby positioned on said grooved portion.

16. (previously presented) The substrate according to claim 15, wherein said distance is gradually increased in a portion of said each V-shaped groove between a longitudinally intermediate part thereof and an end thereof on the side of said shoulder.

17. (Original) The substrate according to claim 15, which is formed by a press forming method.